# July 6,2616 #12



DEPARTMENT OF COMMUNITY SERVICES
PLANNING DIVISION
TOWN OF WEST HARTFORD
50 SOUTH MAIN STREET
WEST HARTFORD, CT 06107-2431
TEL: (860) 561-7555 FAX: (860) 561-7504
www.westhartford.org

# PERMIT APPLICATION FOR INLAND WETLANDS & WATERCOURSES ACTIVITY: (check one of the following)

Street Address of Proposed Application: Work Zone: R-O Acreage/Lot Area	REGULATED ACTIVITY  Surcharge Fee Date Received 5.18.16  t in the Right-of-Wey Of  man Ave and Brackurn Rd. generally icent to 47 and 200 whitman Rd & 45 Bracky  A Parcel/Lot# // A  Engineer
Brief Description of Proposed Activity: Perfor	m repair to drainage culvert conveying
Trout Brook under Brueburn Road/	Whitman Avanue
best of his/her knowledge and belief. Furtherm constitutes permission and consent to Commissi given the Connecticut Department of Public Healt.	ents contained herein and in all supporting documents to the ore, the applicant agrees that submission of this document on and Staff inspections of the site. Note: Notice is hereby the must be notified by applicants for any project located within tershed area. (CTDPH website at http://www.dph.state.ct.us)
Town of West Hartford Record Owner's Name	Duane Martin Applicant's Name
50 South Main Street Street	50 South Main Street Street
West-Hardford, CT 06107 City State Zip	West Hartfor CT 06107 City State Zip
Telephone #	860-561-7539 Telephone #
Contact Person:	
Duane Martin Name	Ducip Month
50 South Main Street Street	Signature of Owner/Authorized Agent
West Hartford CT 06107 City State Zip	
760-561-7539 Duane Mo Telephone # E-Mail Usd/TPZ/Templates/IWWAPermitApplication_Aprill3	west-Hartfordct.gov







### **MEMORANDUM**

TO: Todd Dumais, Town Planner

FROM: DJM Duane J. Martin, P.E., Town Engineer

RE: Inland Wetlands and Watercourses Activity Application

Proposed Braeburn Road Drainage Culvert Rehabilitation

DATE: May 18, 2016

The Engineering Division requests an Inland Wetlands and Watercourses Activity Permit for the proposed the rehabilitation of the drainage culvert under Braeburn Road/Whitman Avenue that conveys Trout Brook. The culvert is located under the roadway within the Town's Right of Way at the location where the street name changes between Braeburn Road and Whitman Avenue. The two properties adjacent to the culvert are Town properties, 200 Whitman Avenue (Fairview Cemetery property) and 47 Pleasant Street (Open Space).

The drainage culvert consists of two steel corrugated metal pipes approximately 9 ½ feet wide by 6 feet high. The culvert was installed in 1960. The Connecticut Department of Transportation inspects this drainage structure and several other culverts and bridges in West Hartford every other year. Based upon the last state inspection in 2014, this culvert received a Poor condition rating and was deemed structurally deficient. This determination was primarily due to scouring (washout) at the inlets, outlets, and beneath both pipes. Both pipes also lack the asphalt coating at or below the water level, which allows rust to further deteriorate the pipes. In addition, the pipe bottoms now have small holes. The rehabilitation is required to maintain the structural integrity of the drainage culvert, which allows Braeburn Road/Whitman Avenue to stay open for public travel.

The Town applied for and received grant funding through the Connecticut Department of Transportation's Local Bridge Program to fund part of the proposed culvert rehabilitation project. The Engineering Division retained Tectonic Engineering & Surveying Consultants, P.C. to perform the wetland review, culvert inspection, and culvert rehabilitation design.

The following information is included as part of the Inland Wetlands and Watercourses Activity Application:

1. Completed Town of West Hartford Permit Application for Inland Wetlands & Watercourses Activity

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- 2. Completed Connecticut Department of Energy and Environmental Protection, Statewide Inland Wetlands & Watercourses Activity Reporting Form
- 3. 14 Copies of a wetland review letter provided by Environmental Planning Services, LLC
- 4. 14 Copies of the Inland Wetlands & Watercourses Commission Schematic Report prepared by Tectonic Engineering & Surveying Consultants, P.C.
- 5. 14 Copies the Schematic Design Report prepared by Tectonic Engineering & Surveying Consultants, P.C.
- 6. 2 Full size and 14 reduced size copies of the proposed Rehabilitation of the Braeburn Road culvert over Trout Brook

Please note the plans are at a semi-final design stage and we hope to start this project in the summer of 2017. This culvert is located approximately 200 feet east of the Braeburn Elementary School. This project will have some impact to traffic flow, which is why we are hopeful to perform the majority of the impactful work in the summer when school is out and water flow is reduced.

The following information is important to note as it pertains to the proposed work within the regulated area:

#### Plan Set

- Sheet number 2 in the plan set identifies the flagged wetland limits around the culvert.
- Sheet number 7 identifies the anticipated work limits within the regulated area and the proposed erosion and sedimentation control measures.
- Sheet number 8 details the proposed erosion and sedimentation control measures

#### Wetland Review Letter

Explains the review methods and soil types encountered from a site review

#### Inland Wetlands & Watercourses Commission Schematic Report

- Scope of proposed work
- Description of equipment to be used within the regulated area with corresponding color photos
- Anticipated project duration

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- Identified alternative rehabilitation methods considered
- Hydraulic Analyses description of the project's minimal impact on the existing flood zone

#### Schematic Design Report

- Provides information on the culvert condition and repair methods
- Appendix A includes the Connecticut Department of Transportation's 2014 inspection report with photographs
- Appendix B includes the Tectonic Engineering & Surveying Consultant's Inspection photographs
- Appendix C includes a preliminary culvert analysis report, which compares the current Trout Brook flow to the anticipated flow with the proposed culvert rehabilitation

#### **Environmental Planning Services, LLC**

Wetland, Biological and Soil Sciences

March 24, 2016

Mr. Jeff Scala Tectonic Engineering 1344 Silas Deane Highway, Suite 500 Rocky Hill, CT 06067



RE:

Braeburn Road @ Trout Brook

West Hartford, CT

Dear Mr. Scala:

EPS was retained to delineate the wetlands and watercourses on a portion of the referenced site as shown on the attached plan. The wetland delineation was conducted by a soil scientist, according to the requirements of the CT Inland Wetlands and Watercourses Act (P.A. 155). Wetlands are defined as areas of poorly drained, very poorly drained, floodplain, and alluvial soils, as delineated by a soil scientist. Watercourses are defined as bogs, swamps, or marshes, as well as lakes, ponds, rivers, streams, etc., whether natural or man-made, permanent or intermittent.

The wetlands were delineated by an EPS soil scientist, who walked over the site on December 10, 2015, and examined the upper portion of the soil profile with a spade and auger. Field conditions were sunny, and seasonal with no snow or frost. Those areas meeting the criteria noted above were marked with sequentially numbered plastic flagging tape. The wetland soils are Walpole loam. The Walpole series consists of very deep, poorly drained sandy soils formed in water-sorted glacial outwash and stratified drift. They are nearly level to gently sloping soils in low-lying positions on terraces and plains. Walpole soils have a water table within 1' of the soil surface much of the year.

The non-wetland soils were not examined in detail, except as was necessary to identify the boundary with the wetland soils. They are mapped as Enfield silt loam. The Enfield series consists of very deep, well drained loamy soils formed in silty mantled glacial outwash. They are nearly level to sloping soils on outwash plains and terraces. Slopes range from 0 to 15 percent, but are generally less than 8 percent. The soils formed in a silty mantle over stratified sandy and gravelly fluvial materials derived from a variety of acid rocks.

Please feel free to call me if you have any questions regarding our findings.

Yours truly,

Michael S. Klein, Principal

Soil Scientist

Professional Wetland Scientist



# INLAND WETLANDS & WATERCOURSES COMMISSION SCHEMATIC REPORT

CULVERT REPAIRS OF BRIDGE NO. 06076

BRAEBURN ROAD OVER WEST BRANCH TROUT BROOK

WEST HARTFORD, CONNECTICUT

#### Prepared For:

TOWN OF WEST HARTFORD
COMMUNITY SERVICE DEPARTMENT
ENGINEERING DIVISION
17 BRIXTON STREET
WEST HARTFORD, CONNECTICUT 06110

#### Prepared By:

TECTONIC ENGINEERING & SURVEYING CONSULTANTS, P.C.
1344 SILAS DEANE HIGHWAY
ROCKY HILL, CONNECTICUT 06067

**PUBLICATION DATE: APRIL 14, 2016** 



#### Scope of Work

The rust, perforations, and section loss presented in the steel corrugated pipes require repair work to preserve the structural integrity of the bridge. The majority of the damage is below the spring line. Two construction stages will be required to complete the repairs. One barrel will remain open at all times throughout the construction process, with the other barrel closed off with steel sheeting at the ends and dewatered. Repair work will then be completed on the partitioned barrel according to the details on drawing 5 of the Design Drawings, which include the welding of stud shear connectors to the existing culverts, the placement of rebar and concrete in the culverts below the spring line, and any steel repair required above the spring line. All missing nuts should be replaced as needed throughout the culverts.

The scour and erosion noticed during the inspections will also require repair work. As noted on drawings 3 and 4 of the Design Drawings, steel sheeting will be installed at the face of the inlets and outlets of both barrels. Riprap will then be installed in front of each opening of both barrels. The debris and overgrowth around the culvert should be cleared prior to construction. Some trees may need to be removed to allow equipment access on both sides of the bridge. See drawing 7 for a plan view of equipment location.

#### **Description of Equipment and Estimated Project Duration**

The following is the minimum equipment that will be used during this project:

- a) steel sheet pile driving hammer/vibrator
- b) excavator (riprap and channel work)
- c) Bobcat loader (sandbags)
- d) concrete pump
- e) water pump (dewatering)
- f) dewatering equipment

The estimated project duration is 30-45 days.

#### Alternative Rehabilitation Methods Considered

During the schematic design, the following three alternatives were investigated (details on page 10 & 11):

- 1) Adding reinforced concrete to the culvert invert.
- 2) Repairing deteriorating sections with new corrugated steel bottom sections.
- 3) Using a culvert liner.

Option 1 was chosen since it is more reliable, easy to construct and maintain, and will provide long term cost savings for the Town.





Photo No. 1

Description: Bobcat Loader

References: TECTONIC 4189.01



Photo No. 2

Description: Concrete pump

References: Google – example photo





Photo No. 3

Description: Dewatering

References: TECTONIC 4189.01



Photo No. 4

Description: Excavator





Photo No. 5

Description: Excavator

References: TECTONIC 4189.01



Photo No. 6

Description: Mini Excavator

Pipework





Photo No. 7

Description: Sheet piling

References: TECTONIC 4189.01



Photo No. 8

Description: Sheet piling





Photo No. 9

Description: Sheet piling

References: TECTONIC 4189.01



Photo No. 10

Description: Sheet piling





Photo No. 11

Description: Sheet piling

References: TECTONIC 4189.01



Photo No. 12

Description: Sheet piling



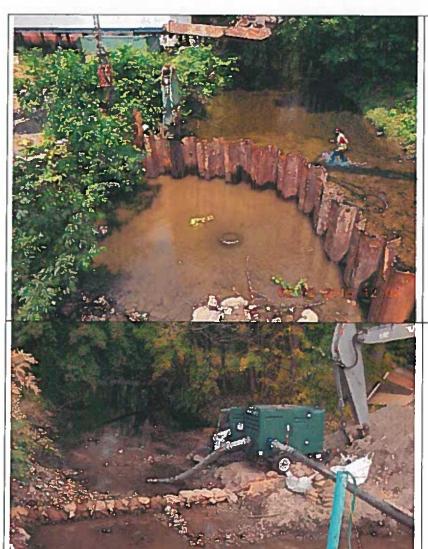


Photo No. 13

Description: Sheet piling

References: TECTONIC 4189.01

Photo No. 14

Description: Water Pump





Photo No. 15

Description: Wire wheel brush

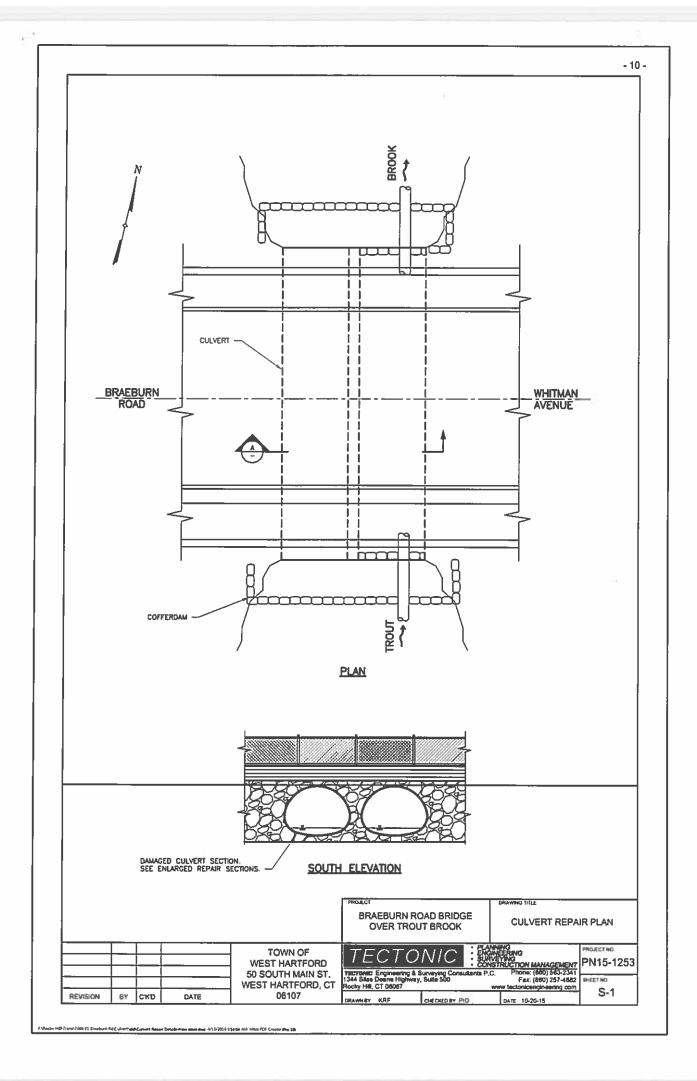
References: Google - example photo

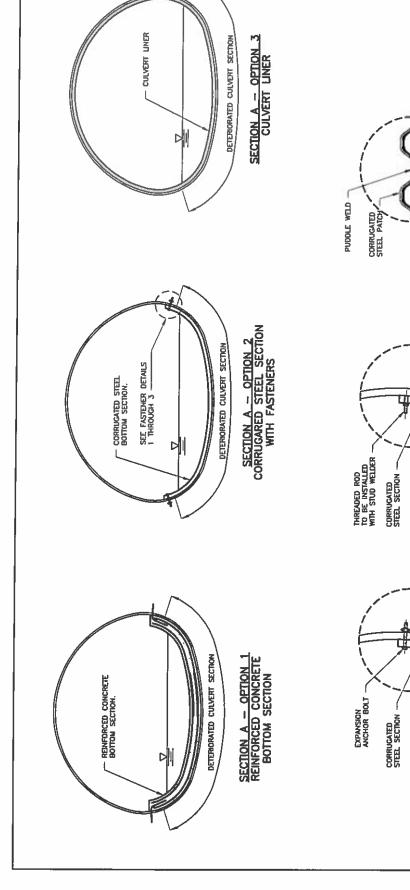


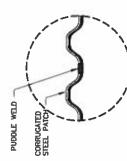
Photo No. 16

Description: Wire wheel brush

References: Google – example photo







DETAIL 3 - OPTION 2 PUDDLE WELD

DETAIL 2 - OPTION 2 WELDED THREADED ROD

DETAIL 1 - OPTION 2 EXPANSION ANCHOR BOLT

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TOWN OF WEST HARTFORD 50 SOUTH MAIN STREET WEST HARTFORD, CT 06107

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	DRA WHITE KRE	KBB	CHECKED BY PIO		DATE 10-20-15	7-0

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www.lectoricargineering.com	DATE 10-20-15
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1344 Sáns Deane Highway, Rocky Hill, CT 06067	DRA WALITY KRE
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#### **Hydraulic Analysis**

A complete hydraulic analysis was performed on the culvert and stream. The results are included in the revised Preliminary Culvert Analysis Report found in Appendix C of the revised Schematic Design Report.

The proposed repairs to the culvert is the most common method based on the identified deterioration of the invert, specifically the section loss due to abrasion and corrosion. The modification provides the structural strength and long term protection. This has a minor effect of raising the water surface profiles upstream for a very short distance in the range of 25 to 50 feet (refer to the table on page 13, as shown on page C2 of the revised Schematic Design Report). The smoother concrete offsets some of the increase but not all, with the effect less at higher flow rates.

An alternative to the proposed repair included fabricating new custom plates for the bottom and up part of the sides. This would have negligible effect on the water surface profile. Proprietary systems to line the culvert was another alternative. Based on the size of the culvert, the lining would also be custom made or spray applied. We are not confident that the lining would last as long as the manufactures advertise, nor supply the strength requirements and be thin enough to have minimal effect on the water surface profile.

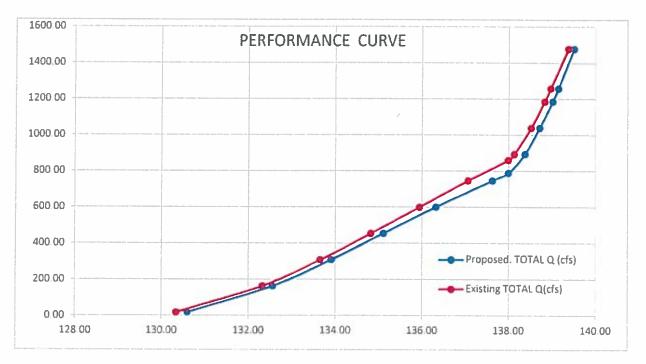
# **HY-8 Analysis Results**

#### **Crossing Summary Table**

Culvert Crossing: Braeburn Road Proposed

	dwater ition (ft)	Total Dis	charge (cfs)		ischarge :fs)		ischarge cfs)	Road	way Discharge (cfs)
PORO	EXIST.	PORO.	EXIST.	PORO.	EXIST.	PORO.	EXIST.	PORO.	EXIST.
130.60	130.34	17.20	17.20	11.20	11.08	6.14	6.12	0.00	0.00
132.58	132.33	163.48	163.48	87.36	87.65	76.12	75.83	0.00	0.00
133.91	133.66	309.76	309.76	161.64	161.85	148.09	147.87	0.00	0.00
135.12	134.83	456.04	456.04	235.49	235.65	220.55	220.39	0.00	0.00
136:33	135.95	602.32	602.32	306.82	309.22	295.50	293.22	0.00	0.00
137.63	137.07	748.80	748.60	379.83	382.47	368.69	366.13	0.00	0.00
138.00	138.00	790.20	862.37	400.64	439.34	389.55	423.03	0.00	0.00
138.38	138.14	894.88	894.88	416.74	447.59	408.53	431.28	69.52	15.64
138.72	138.53	1041.16	1041.16	431.16	484.39	422.98	469.57	186.51	233.40
139.02	138.84	1187.44	1187.44	443.33	490.27	433.17	476.48	310.61	293.19
39.15	138.98	1260.00	1260.00	448.70	469.59	439.51		371.65	117.81
39.51	139.39	1480.00	1480.00	463.76	498.79	454.67	483.34	561.48	497.65

PROPOSED	CFS	slope of line	df	dy	Hevation
Q2	344	0.00827	112.04	0.93	134.19
Q25	1040	0.00232	1.16	0.00	138.72
Q50	1260	0.00179	0.00	0.00	139.15
Q100	1480	0.00164	0.00	0.00	139.51
EXISTING	CFS	slope of line	đf	dy	Elevation
Q2	344	0.008	112.04	0.90	133.93
Q25	1040	0.00267	1.16	0.00	138.53
Q50	1260	0.00193	0.00	0.00	138.98
Q100	1480	0.00186	0.00	0.00	139.39



Culvert see pg. 2 #3b.

Town of West Hartford Conservation and Environment Commission (CEC) Meeting Minutes May 31, 2016, 7:00 PM Town Hall, Room 400

**Present:** Commissioners: Brian McCarthy (Chair), Scott Sebastian (Vice Chair), Dennis Durao, Ryan Langan, Chen Lu, Beth Lander Morris, Stefanie Wnuck

- 1. The March 2016 CEC Meeting Minutes were approved (on Motion by Langan, Second by Lu).
- 2. Communications and News: Dallas Dodge has resigned from the Commission.
- 3. New Business:
- 72 Hillsboro Drive Application (IWW #1044) of Deborah E. Beach, (Tom Daly, P.E., Contact) requesting approval of an Inland Wetlands and Watercourses Permit to conduct certain regulated activities which may have an adverse impact on a watercourse (Hunter Brook). The applicant proposes to install 6" sewer lateral in order to provide sanitary sewer service to the existing home and make associated site improvements. All construction will conform to the MDCs standard requirements and specifications (Submitted for IWWA receipt on June 6, 2016. Presented for determination of significance.)

Thomas Daly, P.E. at Milone and Macbroom, presented the application on behalf of the current homeowner. The property has a perennial walled stream channel (with a foot bridge) running across the front yard, which faces Hillsboro Drive. It is not clearly understood if the stream (Hunter Brook) is dry during the year.

The home has a failed septic system as determined by Bob Proctor of the West Hartford Bloomfield Health District. There are sewer lines on both Hunter Drive and Hillsboro Drive. The subject property is accessed by a driveway off Hunter Drive. The project proposes to abandon the existing septic system, leaving it in place, and filling it in with gravel.

The applicants are proposing to install a 6" sewer lateral from the home across the front yard, crossing the walled stream channel to connect to an existing sanitary sewer pipe on Hillsboro Drive. It is thought that MDC has already stubbed out a connection on Hillsboro Drive. The applicant has tentatively selected to contract with JDC Enterprises, Inc. to perform the work. Pending project approval, JDC proposes to sandbag the stream, likely in July, pump stream water around the construction area, and to dig a trench connecting the waste pipe to the sewer on Hillsboro. The applicants mentioned they would hand dig to install the 6" sewer lateral underneath the streambed. The sewer will be surrounded by a cement encasement to prevent potential future erosion of the pipe from the stream channel. The applicants have said that the contractor would plan to

complete the project during a single continuous work shift, estimated to be 12 to 16 hours, to minimize the impact on the stream.

In response to an inquiry by the CEC about whether a diversion permit is needed, Daly stated that this project does not require a diversion permit as it is a temporary bypass of the stream and not a diversion of flow.

Daly then presented alternate design approaches that were deemed infeasible. Installing a sewer lateral to connect to the sanitary sewer instead on Hunter Drive, located behind the property (and where the home's driveway is located), was deemed infeasible. Ben Diamond and Alexandra Zikely, prospective homebuyers in attendance, stated that MDC would not approve of a sewer connection to Hunter Drive due to public health codes as there is an existing water main, although no documentation was offered of this claim. In addition, there is a 10-foot-wide strip of land not owned by the homeowner that separates the property and the Hunter Drive right-of-way. Daly also noted that due to the grading on the property, connecting a sewer to Hunter Drive would require a pump, which would not be desirable. The CEC would contend that a pump system would be an option in order to preclude the significant disturbance to Hunter Brook.

The CEC recommends that a sewer connection to Hunter Drive be re-evaluated as a better alternative than connecting to the Hillsboro Drive sewer. It is not understood if other homes on Hillsboro have sewer pipes that cross under or through Hunter Brook in this area. The commission also would request the documentation from MDC that a connection to the Hunter Drive sewer is not feasible, as presented by the applicants. If the project were to proceed with a connection to the Hillsboro Drive sewer, CEC would recommend any work to be performed during periods of low flow in Hunter Brook, typically late August/September.

Work in the Right-of-Way of Whitman Avenue and Braeburn Road, Generally
Adjacent to 47 and 200 Whitman Road (Braeburn Culvert) - Application (IWW #1045) of Town of West Hartford (Duane Martin, Town Engineer) seeking approval of an Inland Wetlands and Watercourses Permit to repair the drainage culvert conveying Trout Brook under Braeburn Road/Whitman Avenue. (Submitted for IWWA receipt on June 6, 2016. Presented for determination of significance,)

Duane Martin, P.E. at the Town of West Hartford and Jeffrey Scala, P.E. at Tectonic presented the application. The Town of West Hartford has hired Tectonic as the consultant for this project, and will retain Tectonic through the bidding process. The Braeburn Culvert, located where Whitman Avenue becomes Braeburn Road, is a galvanized plate steel twin drainage culvert built in the 1960's. The culvert is approximately 6 feet high and 9.5 feet wide. Upon inspection by the state Department of Transportation (DOT) in 2014 the culvert has received a Poor condition rating. Although the structure itself remains intact, the metal is corroded and there are some holes in the steel. Scouring is occurring at the inlets and outlets. Currently water is channeling underneath the culverts.

The Town of West Hartford has received a matching grant from Connecticut DOT's Local Bridge Program to help pay to repair Braeburn Culvert. Pending project approval, Duane Martin estimated construction will begin in the summer of 2017 when school is out (as Braeburn Elementary is nearby).

Tectonic conducted hydrologic analysis of existing conditions as well as potential stream flows based on a two-year storm. Tectonic proposes to repair the culvert by welding stud shear connectors to the existing culverts, placing rebar and concrete below the spring line, and any additional steel repair required above the spring line. They will use steel sheet piling to close off one barrel at a time and there will be a temporary flow pipe 3-4 feet in diameter to accommodate a two-year storm event during the construction period. It is anticipated the project will take about two months to complete. Tectonic also proposes to install a frac tank to store any sediment picked up during the pumping process and plans to dispose of any collected sediment offsite. The use of overhead equipment is restricted due to the utility lines adjacent to the site. Contractors will use the parking lot access to store equipment and gain access to the project site. This will likely require some tree removal. Martin noted that the town has a 1:1 tree removal to planting policy that will be upheld and potentially increased for this project.

Scala then discussed proposed alternatives that were deemed not feasible. Replacing the culvert entirely was deemed unnecessary, particularly since it is likely a new bridge would need to be constructed. Installing new lining for the bottom and top of the culvert was rejected because of concerns the material would not last as long as the manufacturers advertise.

The applicants noted they are in the semi-final design stage and are planning to do additional outreach to abutting neighbors and to Braeburn Elementary. The Town of West Hartford owns the land adjacent to the project site.

The CEC did not express any significant concerns with the proposed project.

4. Motion for Meeting Adjournment approved (on Motion by Langan, Second by Sebastian,).

#### **Catherine Dorau**

Subject:

FW: Culvert Repair - Resident Concerns/Inquiry

From: Duane Martin

Sent: Wednesday, June 29, 2016 4:37 PM

To: Catherine Dorau <cdorau@WestHartfordCT.gov>
Cc: Todd Dumais <Todd.Dumais@WestHartfordCT.gov>
Subject: RE: Culvert Repair - Resident Concerns/Inquiry

Cathy,

Thank you again for forwarding this. Muriel suggested that I talk to her husband. He was very pleased with all of my answers. He (they) will most likely attend the hearing. I will have a tree removal/replacement answer at the hearing.

Duane J. Martin, P.E. Town Engineer Town of West Hartford

Department of Community Services: Engineering Division

50 South Main Street, Room 204 | West Hartford CT 06107 | t 860.561.7539 | f 860.561.7551



From: Catherine Dorau

Sent: Wednesday, June 29, 2016 1:53 PM

To: Duane Martin < <u>DuaneM@WestHartfordCT.gov</u>>
Cc: Todd Dumais < <u>Todd.Dumais@WestHartfordCT.gov</u>>
Subject: Culvert Repair - Resident Concerns/Inquiry

#### Duane

Muriel (husband/Richard)Sleezer, 32 Willowbrook Road, saw the wetland P/H signs at the culvert. She was not one of the direct abutter's. Via our phone conversation, she was able to access the application/written report, etc. as well as the plans. She was going to go over them in further detail.

#### Some specific concerns were:

- how many trees were being removed I told her to look at the Schematic Report it said 'some' trees and that the limits of work were on Sheet 7 of the plans.
- Access to the area concerns
- When would project start I answered anticipated Summer 2017

She asked about the public hearing/process and likely will attend. She also has other technical questions that I thought a call from you might help alleviate some of her concerns. She said if you could call her today or tomorrow that would be good... or after the holiday.

Thanks, Cathy

Catherine Dorau Associate Planner





#### **Property Information**

Property ID 6201 2 200 0001

Location Owner 200 WHITMAN AVENUE TOWN OF WEST HARTFORD



# MAP FOR REFERENCE ONLY NOT A LEGAL DOCUMENT

Town of West Hartford, CT makes no claims and no warrantles, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Parcels updated 5/22/2015 Properties updated Daily